

User's Manual



Filtering unit

MATRIX-1000-1-S

MATRIX-1000-1-A

MATRIX-1000-2-S

MATRIX-1000-2-A

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1. Introductory remarks

The purpose of the present **User's Manual** is to give directions within the range of application, installation, start-up and the operational use of the filtering unit **MATRIX-1000**.

Installing, start up and operational use are exclusively admissible after getting acquainted with the contents of the User's Manual.

With regard to continuity of works carried on improvement of our products, we reserve for ourselves the revision possibility of the draft and technological changes improving their functional features and safety.

The construction of MATRIX-1000 meets the requirements of the current state of technology as well as the safety and health assurances included in:

- **Machinery Directive 98/37/EC**
- **Low-voltage Directive 06/95/EC.**

The device has been constructed and manufactured on the basis of following standards:

- | | |
|-------------------------------|---|
| PN-EN ISO 12100-1:2005 | – “Safety of machinery. Basic concepts, general principles for design. Part 1: Basic terminology, methodology”. |
| PN-EN ISO 12100-2:2005 | – “Safety of machinery. Basic concepts, general principles for design. Part 2: Technical principles”. |
| PN-EN 60204-1:2001 | – “Safety of machinery. Electrical equipment of machines. Part 1: – General requirements”. |

2. Application

MATRIX-1000 has been developed for cleaning the air from dusts at the mobile welding posts. The appliance can be used also for capturing other sorts of dust of relatively small emission of contamination (up to 10 cm³ a day). **Important is that the dust is dry and do not create explosion hazard.**

Due to the applied cartridge filter with a teflon membrane, the device captures very small fractions of dust, even smaller than 0,4 µm.

3. Reservations of Producer

- A. Producer accepts no liability for any consequences following from the operational use that is in contradiction to the purpose of application.
- B. It is unacceptable to install on the structure of the unit any additional elements not belonging to its normal construction or accessory set.
- C. Any structural changes or modification of the unit made by User on one's own are not permitted.
- D. Protect the flexible elements as well as the pipes of the suction duct from mechanical damage.
- E. Maintenance and any repair works can exclusively be carried out by an authorized person.
- F. Neither use the device for conveying the air containing viscous compounds nor aggressive substances that would damage the filters, and dusts creating explosion hazard.
- G. **In the course of operational use, pay attention that any sources of ignition i.e. glowing cigarettebutts would not get into the filtering chamber.**

4. Technical Data

Table No.1

type	Part.No	mode of control	volume flow	motor rate	supply voltage	noise level	weight	quantity and type of the applied extraction arms
			[m ³ /h]	[kW]	[V]	[dB(A)]	[kg]	
MATRIX-1000-1-S	800O28	manual	1000	0,75	230	66	85	1 x ERGO-L/Z-2-R
MATRIX-1000-1-A	800O29	autom.	1000	0,75	230	66	85	1 x ERGO-L/Z-2-R
MATRIX-1000-2-S	800O30	manual	2x500	0,75	230	67	88	2 x ERGO-L/Z-2-R
MATRIX-1000-2-A	800O31	autom.	2x500	0,75	230	67	88	2 x ERGO-L/Z-2-R

Caution:

1. Weight of the device along with the ERGO extraction arm
 - MATRIX-1000-1 99 kg
 - MATRIX-1000-2 110 kg
2. Maximum vacuum amounts 2600 Pa
3. Filtration efficiency – 99,5%.

5. Structure and Function

MATRIX-1000 consists of subsequent elements:

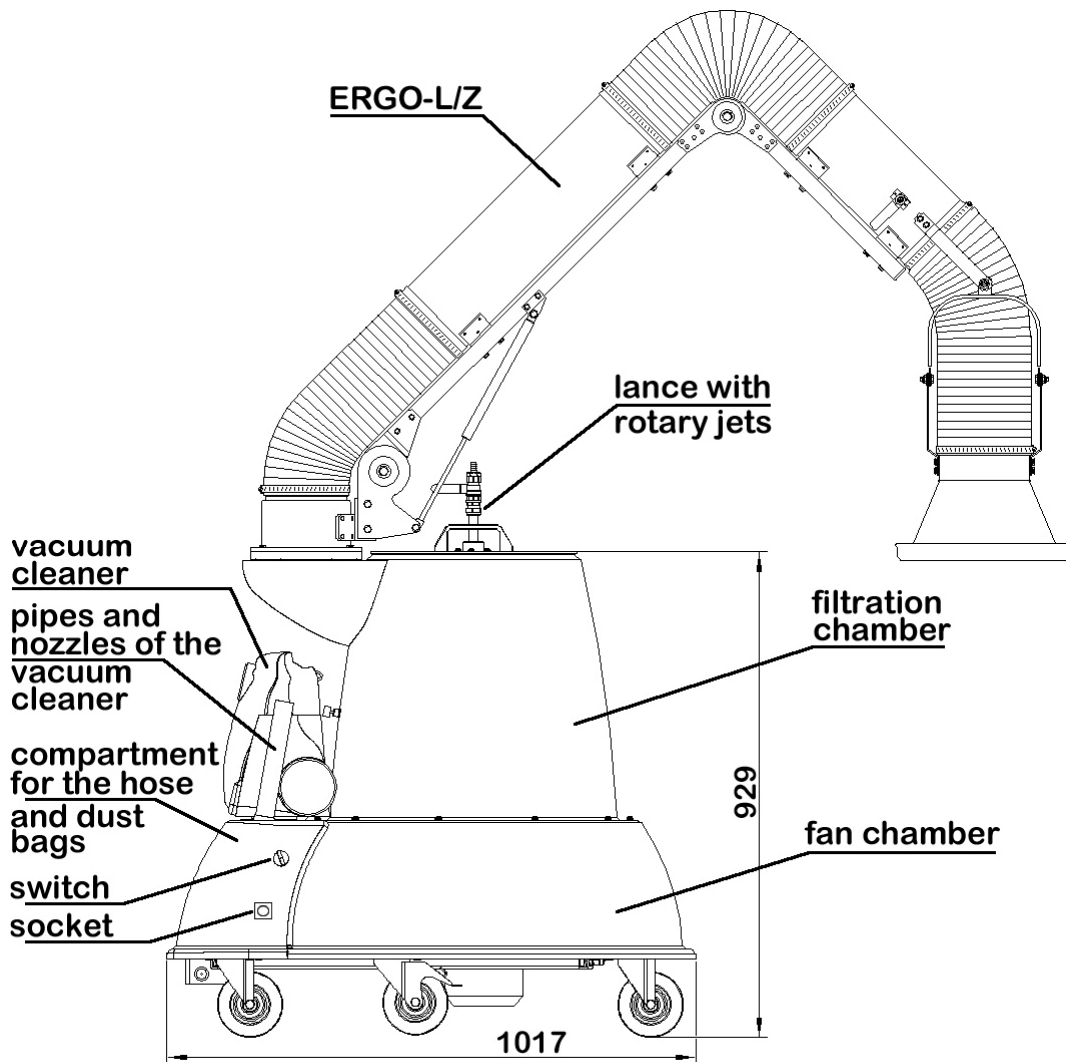
- housing – polyester-glass composite
- radial fan – zinc-coated steel sheet
- cartridge filter – polyester, coating of teflon membrane
- rotary jets – to regenerate the cartridge filter
- support – to install the ERGO extraction arm – (for MATRIX-1000-2 two supports)
- control unit (version for manual or automatic control)
- castor assembly – to displace or turn the device
- vacuum cleaner.

MATRIX-1000-1 is designed for installing one extraction arm of diameter Ø160 and workrange 2 meters (ERGO-L/Z-2-R) and as standard it is designed for extraction at one welding station (see *Phot. No.1*).

MATRIX-1000-2 is adapted for two extraction arms of diameter Ø160 and workrange 2 meters (ERGO-L/Z-2-R). This version is appropriate for applications in non-constant cases for low intensive welding (ie. for schooling purposes)

MATRIX-1000 is executed in two control options.

In the standard version the fan has to be operated manually. Whereas, in the automatic version, after the appliance is switched on manually, first the electromagnetic valve opens automatically (supplying the compressed air to the rotary jets), subsequently – after several seconds the fan is being switched on automatically.



Dwg. No.1 – MATRIX-1000 – main view

6. Assembly and Start

MATRIX-1000 requires connection to the external compressed air installation of pressure at least 0,6 MPa. The pressure hose ought to be of 16 mm diameter. Energizing with 230V power proceeds through a 5 meters' supply cable with a plug. Prior to operational use, it is important to put the MATRIX at a place near the workplace. Subsequently, set the hood of the ERGO extraction arm in distance 20 – 30 cm from the emission of pollution.

To start the device use the switch installed in the lower part of the housing of the compartment for vacuum cleaning accessories.

In standard version the fan is operated immediately after the device is switched on, whereas, in the automatic version, the fan starts in 3 seconds (in the meanwhile the filter is regenerated).

7. Use

Application of the device at a mobile welding post – see Phot. No.1.



Phot. No.1

In the filter regeneration process, the dusts accumulated on the outer surface of the filter are periodically struck by the rotary jets. Standard version (MATRIX-1000-1-S and MATRIX-1000-2-S) – when the flow efficiency drops – switch off the device, wait until the fan impeller stops rotating, subsequently, open the ball valve of the compressed air installation, slide the lance with rotary jets up and down – Phot. No.2 (the lance is placed in the filter cover).



**System of manual filter cleaning
Phot. No.2**



**System of automatic filter cleaning
Phot. No.3**

Automatic version (MATRIX-1000-1-A and MATRIX-1000-2-A) – when the flow efficiency drops – switch off the device, in two seconds switch it on.

The cleaning proceeds automatically (the filters are blown through by eight rotary jets – Phot. No.3).

The dust accumulated in the lower part of the filtration chamber ought to be removed periodically by means of a vacuum cleaner (attached to the device).

In order to do this, remove the cover along with the lance (open the 4 clasps), and subsequently pull out the filter (see Phot. No.4).

In case of automatically controlled device MATRIX-1000-A, first take off the coil of the electromagnetic valve with the hose (open the hook and take off the coil) and then open the clasps.



Phot. No.4

Sorts of the vacuum cleaner nozzles – see Phot. No.5



**nozzle for cleaning
the filtration chamber**

Phot. No.5



**nozzle for cleaning
the workplace**

The vacuum cleaning hose along with the accessories is placed in a compartment which is under the vacuum cleaner.

Having taken off the vacuum cleaner, connect it to the 230V socket (near the fan switch) – see Dwg. No.1.

The dust is accumulating in a single-use bag of the vacuum cleaner.

For the dust cleaning inside the device – see Phot. No.6.



Phot. No.6

The vacuum cleaner can also be used for cleaning the workplace, after the nozzle is changed – see Phot. No.7.



Phot. No.7

After the work is completed, put the hose into the compartment, and the pipes with nozzles place in sockets on both sides of the compartment.

Having placed the vacuum cleaner on the compartment, fasten it additionally to the magnetic holder.

8. Trouble Shooting Guide

	problem	possible reason	corrective action
1.	The suction efficiency is gradually decreasing.	The net of the nozzle is dirty (the net mesh is clogged).	Clean the net or replace it nor a new.
		The filter is not penetrable.	Clean the filter – see Section 7.
2.	Sudden vibrations of the fan are occurring.	Balance loss.	Carry out the balancing.
		Impeller damage.	Replace the impeller.
3.	The ERGO extraction arm is dropping.	Improperly adjusted frictional brake.	Increase the pressure of the frictional disc of the brake by tightening the adjustment nuts.
4.	Inefficient filtration - smoky air is getting out into the room.	The lower sealing of the filter is not tight to the bottom of the partition of the filtration chamber.	Check the tightness of the sealing, remove the eventual pollution between the sealing and the bottom.
5.	Noise (whistle) of the air right beneath the filter cover	Weak clamping force of the filter cover onto the upper sealing of the filter.	Tighten the clamp yokes until the right tightness of the sealing is gained.

9. Maintenance and Repair

Every 12 months check the technical state of the fan, according to the principles of the operational use of the electrical driving devices.
Replace the cartridge filter every 12 – 24 months, depending on the intensity of the operational use.

The maintenance of the ERGO extraction arm consists in following steps executed periodically:

- In case when the joint system is losing its self-supporting properties – undertake their adjustment (according to the rules referring the states of failure of the ERGO extraction arms).
- Lubricate periodically the swivel, using solid grease by pressing it into the lubrication nipple placed on the swivel flange).

Servicing of the device is carried out by C.T.W. KLIMAWENT
ul. Chwaszczyńska 194, phone: +48 (58) 629 64 80

10. Safety

For the safety reasons, connect the device to the power supply according to the being in force regulations within the range of personal protection against the electrical shock and the short-circuit- and overload effects.
Any connection works ought to be executed by a qualified person.



Prior to opening the control unit housing, disconnect the device from the power supply.

User can have access to the connection box (**A1**) by tilting the whole device, and unscrewing the four screws (see schemes – placement of elements).

ERGO extraction arms shall not cause any hazard, provided they are stably installed on the housing of the filtering unit.

Having completed the work, leave the extraction arm in the ultimate operational position, in case when it constitutes obstacle to personnel/User set in into the home position.

During the operational use, follow the general rules of safety and labor hygiene.

11. Storage and Transport

The device ought to be stored in a dry and well ventilated room. The space should be free from aggressive substances.

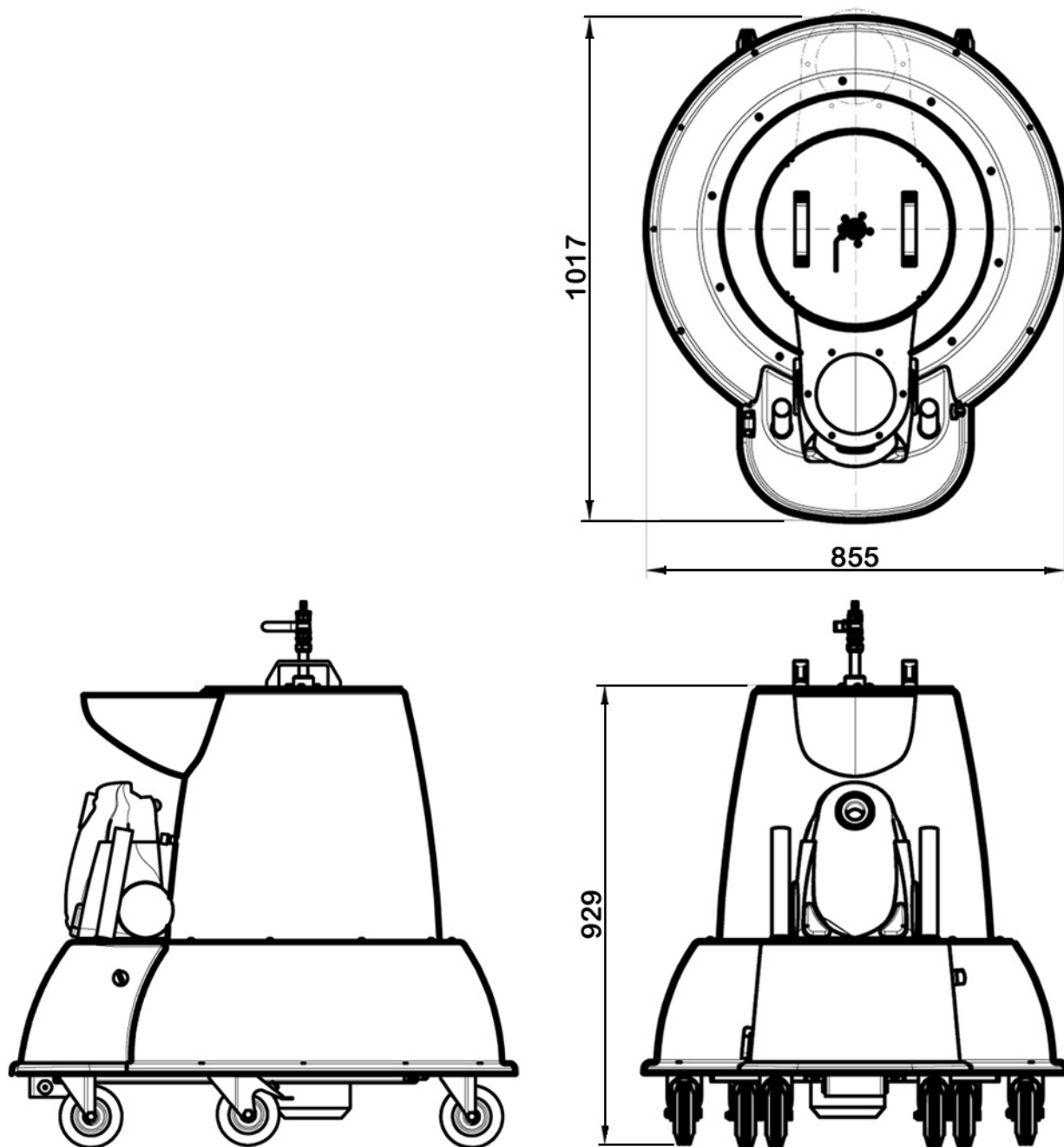
During the transport protect the device from overturn and an uncontrolled displacement. The transport / reloading ought to eliminate the hazard of damage, scratching, indents of the housing. Pay attention that the packages would not get damaged, and the markings on the surface would not get obliterated or detached.

12. Terms of Warranty

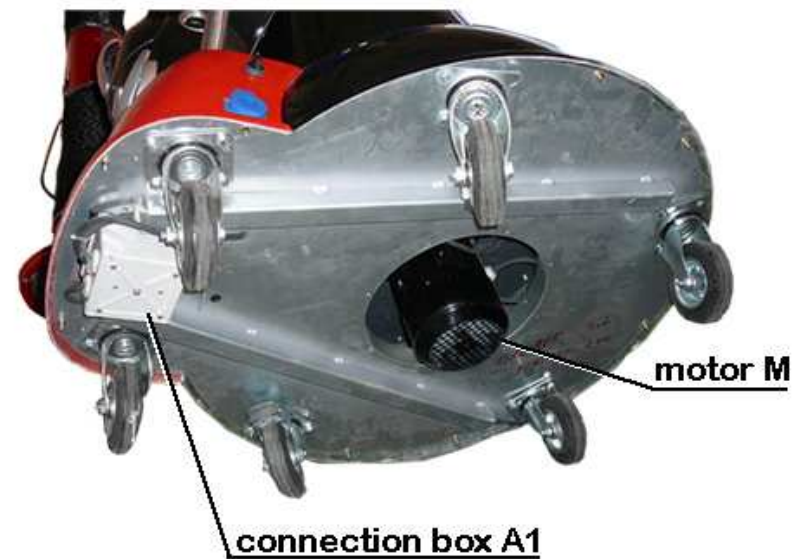
The period of warranty for the purchased device is indicated in the "Card of Warranty". The warranty does not comprise:

- defects and damages arising during the incorrect use and in application that is inconsistent with the present manual,
- mechanical damages caused by User.
- structural modifications, or changes / adaptations introduced by User on one's own,
- mechanical damages being caused during improper storage and transport or incorrect maintenance,
- inefficiency following from the normal operational exhaustion.

In case the rules of the present ***User's Manual*** are not followed, the warranty is losing the validity.



Dwg. No.2 Dimensional drawing



View from the bottom

View of the device MATRIX-1000-S; placement of elements

17.12.2008 E0724

MATRIX-1000.0001





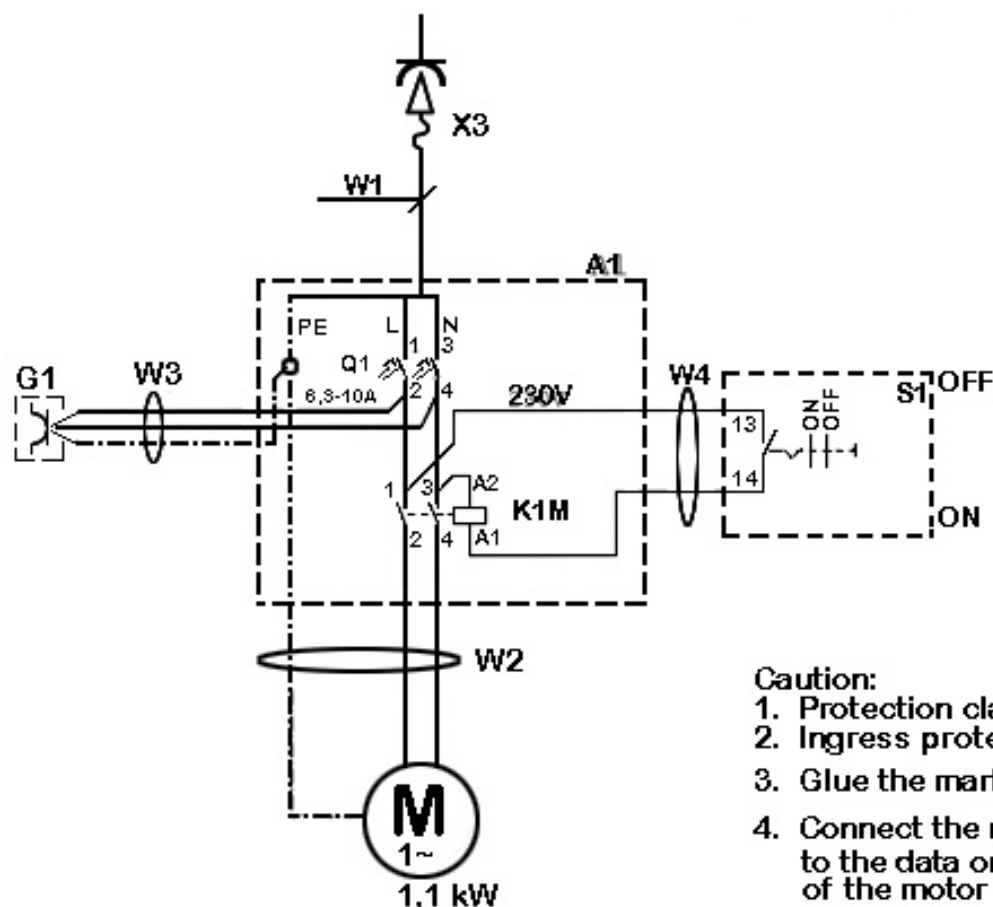
View of the device MATRIX-1000-A; placement of elements

17.02.2008 E0724


MATRIX-1000-A.0001



2	3	4	5
hermetic socket with a bolt IP44	supply voltage 230, 50Hz protection sl=30mA	manual ON OFF	



Caution:

1. Protection class I
2. Ingress protection IP20
3. Glue the mark  on the housing
4. Connect the motor according to the data on the nominal plate of the motor

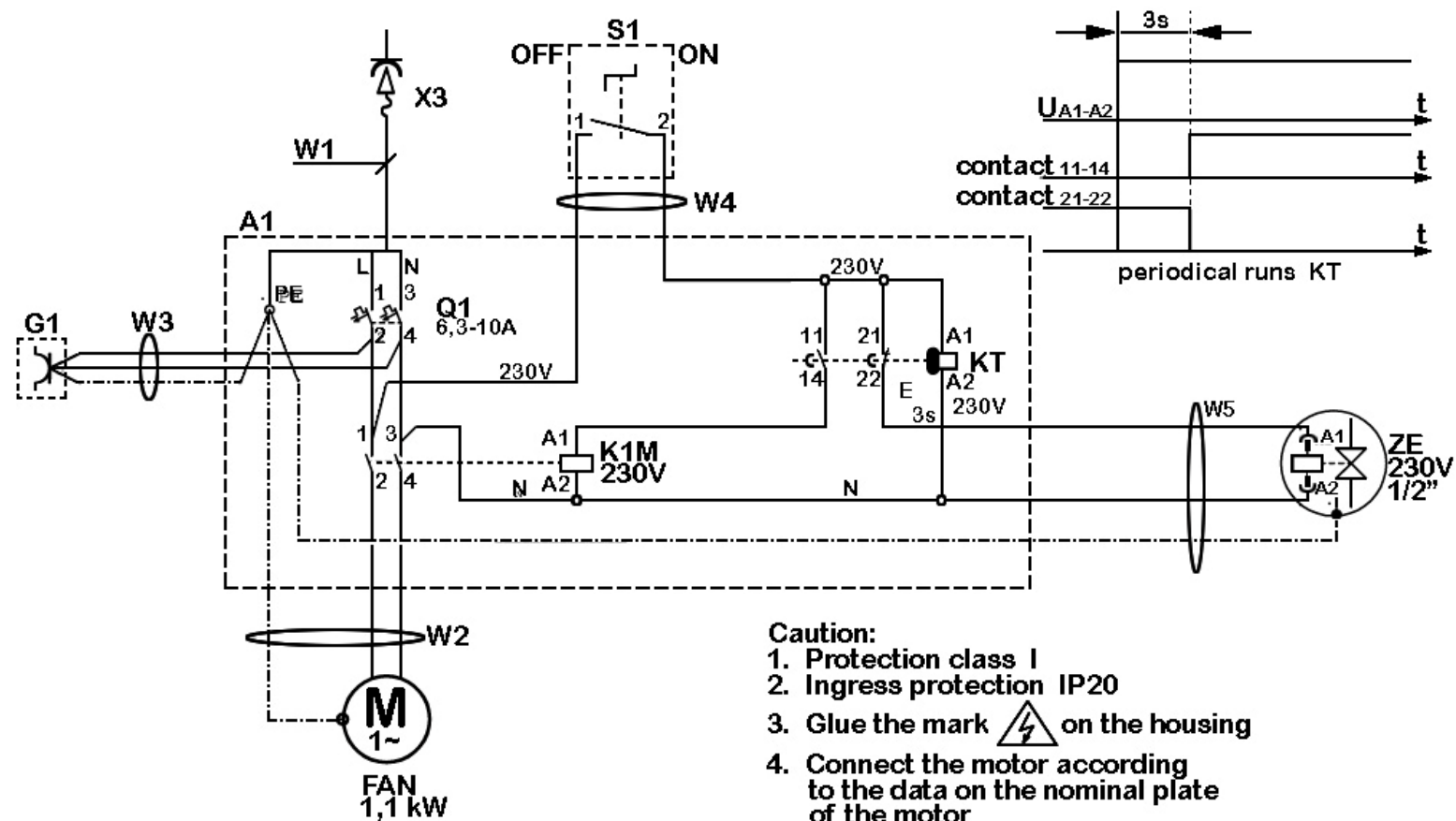
Connection diagram ZE-MATRIX-1000-S

05.01.2009 E0724

MATRIX-1000-S.0002



1	2	3	4	5
hermetic socket with a bolt IP44	supply voltage 230V, 50Hz protection dI=30mA	manual ON OFF	time relay	electromagnetic valve



Connection diagram ZE-RAK-MATRIX-1000/A

17.12.2008 E0724

RAK-MATRIX-1000-A.0002





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0724-MATRIX-1000-1-S – 001/12.2008/EN
0776-MATRIX-1000-1-A – 001/12.2008/EN
0777-MATRIX-1000-2-S – 001/12.2008/EN
0778-MATRIX-1000-2-A – 001/12.2008/EN